

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in this Application:

**Listing of Claims:**

1. (Canceled).
2. (Canceled).
3. (Canceled).
4. (Canceled).
5. (Canceled).
6. (Canceled).
7. (Canceled).
8. (Canceled).
9. (Canceled).
10. (Canceled).
11. (Canceled).
12. (Canceled).
13. (Canceled).
14. (Canceled).
15. (Canceled).
16. (Canceled).
17. (Canceled).
18. (Canceled).
19. (Canceled).
20. (Canceled).
21. (Canceled).
22. (Canceled).
23. (Canceled).
24. (Canceled).
25. (Canceled).

26. (Canceled).
27. (Canceled).
28. (Canceled).
29. (Canceled).
30. (Canceled).
31. (Canceled).
32. (Canceled).
33. (Canceled).
34. (Canceled).
35. (Canceled).
36. (Canceled).
37. (Canceled).
38. (Canceled).
39. (Canceled).
40. (Canceled).
41. (Canceled).
42. (Canceled).
43. (Canceled).
44. (Canceled).
45. (Previously presented) A method for detecting radiation comprising the steps of;
  - a) subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter,
  - b) analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeters using a tomographic process
  - c) illuminating said dosimeter with a light source;
  - d) detecting light from said dosimeter;
  - e) processing said detected light to construct a three dimensional image; and rotating said dosimeter and repeating steps c, d, and e.

46. (Previously presented) The method of claim 45 further comprising the step of:  
c. calculating an amount and distribution of radiation received by the dosimeter from said analyzed three dimensional data.

47. (Previously presented) The method of claim 45 wherein an absolute dose is calculated in said step c.

48. (Previously presented) A method for detecting radiation comprising the steps of;  
a. subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter, and

b. analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeters using a tomographic process wherein the radiation emits from a radionuclide.

49. (Original) The method of claim 48 wherein the radionuclide is selected from the group consisting of radioactive isotopes of iodine, strontium, samarium, yttrium, ruthenium, palladium, cobalt and iridium.

50. (Canceled).

51. (Canceled).

52. (Canceled).

53. (Canceled).

54. (Canceled).

55. (Canceled).

56. (Canceled).

57. (Canceled).

58. (Previously presented) A system for detecting radiation comprising:  
means for subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter;

means for analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter; and

means for rotating said dosimeter.

59. (Canceled).

60. (Canceled).

61. (Previously presented) A system for detecting radiation comprising:

means for subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter;

means for analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter wherein the radiation emits from a radionuclide.

62. (Previously presented) The system of claim 61 wherein the radionuclide is selected from the group consisting of radioactive isotopes of iodine, strontium, samarium, yttrium, ruthenium, palladium, cobalt, and iridium.

63. (Canceled).

64. (Canceled).

65. (Canceled).

66. (Canceled).

67. (Canceled).

68. (Canceled).

69. (Canceled).

70. (Canceled).

71. (Canceled).

72. (Canceled).

73. (Canceled).

74. (Canceled).